National Institute of Environmental Health Sciences

Dietary variation and stress among prehistoric Jomon foragers from Japan

Author(s): Temple DH
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Abstract:

Current archaeological evidence indicates that greater dietary reliance on marine resources is recorded among the eastern Jomon, while plant dependence prevailed in western/inland Japan. The hypothesis that the dietary choices of the western/inland Jomon will be associated with greater systemic stress is tested by comparing carious tooth and enamel hypoplasia frequencies between the eastern and western/inland Jomon. Demographic collapse coincides with climate change during the Middle to Late Jomon period, suggesting dwindling resource availability. It is hypothesized that this change was associated with greater systemic stress and/or dietary change among the Middle to Late Jomon. This hypothesis is tested by comparing enamel hypoplasia and carious tooth frequencies between Middle to Late and Late to Final Jomon foragers. Enamel hypoplasia was significantly more prevalent among the western/inland Jomon. Such findings are consistent with archaeological studies that argue for greater plant consumption and stresses associated with seasonal resource depletion among the western/inland Jomon. Approximately equivalent enamel hypoplasia frequencies between Middle to Late and Late to Final Jomon foragers argues against a demographic collapse in association with diminished nutritional returns. Significant differences in carious tooth frequencies are, however, observed between Middle to Late and Late to Final Jomon foragers. These results suggest a subsistence shift during the Middle to Late Jomon period, perhaps in response to a changed climate. The overall patterns of stress documented by this study indicate wide-spread environmentally directed biological variation among the prehistoric Jomon.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Food/Water Security

Food/Water Security: Agricultural Productivity, Food Access/Distribution, Nutritional Quality

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal, Rural

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: Other Asian Country

Other Asian Country: japan

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Developmental Effect, Other Health Impact

Developmental Effect: Other Functional Deficit

Other Health Impact: carious teeth

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Historical

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content